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TECHNICAL
REPORT

Methodology for Improving the Planning, Execution, and Assessment of Intelligence, Surveillance, and Reconnaissance Operations

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Prepared for the United States Air Force

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PROJECT AIR FORCE

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Summary

This report presents work conducted for a fiscal year 2005 Project AIR FORCE study, "Tasking and Employing Intelligence, Surveillance, and Reconnaissance Assets to Support Effects-Based Operations." Three methodologies are presented that collectively improve the planning, tasking, and employment of ISR assets. The report also includes an assessment of how each strategy performed.

We examine existing joint and Air Force doctrine along with Air Force tactics, techniques, and procedures to understand the role of assessment procedures in the overall intelligence process. ISR assessment techniques, employed by various Air Force units, are examined to determine how these assessments are implemented during current intelligence operations. This report suggests a number of ideas to help improve the ISR assessment process, including utilization of strategies-to-tasks frameworks, standardizing and mandating feedback, and automating certain processes to better utilize ISR Division resources (p. 39). The focus of this work is on Air Force processes and procedures, but other components, joint forces commands, regional combatant commands, and national intelligence organizations could apply many of these same concepts.

Identifying and analyzing the system and operational trade-offs necessary to ensure effective allocation of limited ISR resources against different target sets are complex and difficult tasks. Intelligence officers do not currently have a means to evaluate the costs and benefits of a particular ISR collection strategy. In this report, we describe (1) a new strategies-to-tasks framework for using ISR assets; (2) organizational, training, and doctrinal modifications to improve ISR assessments; and (3) new models to improve future ISR utilization analyses. We also suggest how these new concepts for command and control of ISR forces can be integrated into training for ISR specialists as well as for potential Joint Forces Air Component Command (JFACC) commanders.

In this report, we describe a model developed to quantify the effectiveness of alternative ISR collection strategies to satisfy the range of ISR requirements found in a major theater conflict. The model's analytic framework is divided into two sections: the first focuses on the planning process of building collection "decks," and the second focuses on assessing the execution of the plans in a simulated environment using different collection strategies. Note that we use the term "deck" here to describe the planned collection schedule—e.g., target 1 will be collected at time 12 by asset 4.

Our modeling efforts are applicable to a range of conflict scenarios, but because of time constraints, we focused on a single scenario.[1] Current ISR forces are used as a baseline for this analysis. The flexibility of this modeling framework is demonstrated by examining the effects of employing different sensors and platforms in the same scenario. Results are classified and, therefore, not included in this document.

To assist in moving ISR planning and execution forward from a fixed target and deliberate planning focus to one centered on emerging targets, we propose enhancing the collection-management process with a strategies-to-tasks and utility-based framework. By linking the top-level commander's guidance, operational objectives, and tasks to specific collections and by employing relative utilities, planning for the daily intelligence collections and real-time retasking for ad hoc ISR targets will be enhanced. When current tools are modified to provide this information, planners will be able to link individual collections to top-level operational objectives for better decisionmaking and employment optimization of collection assets. Similarly, in the AOC, intelligence officers will be better able to deal with time-sensitive, emerging targets by rapidly comparing the value of an ad hoc collection with the value of the collection opportunities already planned. To efficiently respond to the ISR demands posed by the rapidly changing battlefields of the future, this more capable decisionmaking framework will ensure the best use of our limited intelligence assets.

The availability of timely and accurate intelligence is critical in both peacetime and wartime. To ensure efficient use of our limited intelligence assets, an end-to-end assessment process is needed to monitor and evaluate daily operations. To date, the majority of ISR assessments have focused on using statistics from the tactical level (e.g., sorties flown and percentage of planned images collected). The question of whether the ISR system is satisfying the commander's intent has gone largely unanswered by these statistical assessment methods.

A summary of our primary observations and recommendations on ISR assessment includes the following:

- An ISR assessment process is critical for determining how well ISR is supporting campaign objectives (pp. 28–29).
- Poor performance by the ISR system can affect the conduct of the entire campaign (p. 9).
- Air Force and joint doctrine provide little or no guidance on how to perform ISR assessment, only directing that it should be done. Air Force Operational Tactics, Techniques, and Procedures (AFOTTP) 2-3.2 provides, by far, the most detailed and useful guidance on ISR assessment. This guidance along with recent work by the Air Combat Command and current combatant command best practices should be utilized in a bottom-up manner to form the next revision of Air Force ISR doctrine. Joint discussions should also be held to compare techniques across services in preparation for joint doctrine revisions (pp. 13, 17–19, 35).
- Adopting a strategies-to-tasks framework for collection planning at the Joint Task Force (JTF) level will enable much more useful strategic and operational ISR assessments because ISR tasks will be clearly connected to campaign objectives and accompanied by measures of effectiveness (pp. 32–37).

[1] The analytic approach is best suited for characterizing major combat operations rather than subsequent stability operations.

- Standardized, joint manuals for the delineation of measurable ISR tasks should be written. Essential elements of information and observables should be generated and disseminated by the Air Combat Command/A2 or Joint Functional Component Command ISR using best practices from current efforts in this area by the various combatant commands and components (p. 35).
- As applicable, quantitative ISR performance data should be collected and processed using database management systems (p. 37).
- JTF J-2 staff and/or the ISR Division in the AOC should develop and disseminate standard Web-based assessment forms for all requestors and users of ISR-generated intelligence (p. 38).
- JTF and component commanders should mandate feedback on ISR performance from all requestors and users of ISR-generated intelligence. Service and joint doctrine as well as training curricula should reflect this requirement (pp. 37, 38).
- Prior to operations, senior members of the JTF and JFACC intelligence staff should plan to elicit feedback from their respective commanders on ISR's contribution toward achieving objectives (p. 38).